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# The "Why" of Wheat Improvement

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Like begets like.

Whatsoever a man soweth, that shall he also reap.

Pure seed of an adapted high quality variety is the foundation of a good crop.

AGRICULTURAL EXPERIMENT STATION
OKLAHOMA A. AND M. COLLEGE
STILLWATER

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## SUMMARY

Oklahoma, as well as other important wheat states, produces rather large quantities of off-grade wheat. The production of such wheat is probably due largely to a lack of understanding of and appreciation for the value of pure wheat of adapted, high-quality varieties by all concerned.

A total of 2,155 carloads of "mixed" wheat was marketed in July and August of 1939 in Oklahoma, with 91% of these cars originating in 6 counties. In the same two months, 461 carloads of wheat were de-graded because of rye admixtures. Five counties in the State produced 83% of this wheat. A total of 219 carloads of smutty wheat was marketed in the first 30 days of crop movement in 1939. Why should this situation exist when pure seed of adapted, high-quality varieties can be obtained at reasonable prices and seed treatment is so effective in preventing stinking smut?

Off-grade wheat causes market discrimination, which is in the form of a community cut. The country elevator price is in many cases a price equal to the value of the average quality wheat being marketed. Thus, wheat producers growing good wheat may receive less for their wheat than its actual value, so that loss will not result to the buyer from the purchase of poor wheat.

Wheat in Oklahoma and the Southwest must be improved. Otherwise, the proportion of "mixed" wheat, rye in wheat, smutty wheat, and wheat of inherently poor-quality varieties may become sufficiently large to bring disrepute in terminal markets to wheat from this State. Such disrepute would mean less demand for Oklahoma wheat, which in turn would greatly hamper the profitable production of the State's most important cereal crop.

# The "Why" of Wheat Improvement

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Of the many well known quotations relating to good farming, none applies more completely to the cause of farm wheat improvement than that which reads, "Whatsoever a man soweth, that shall he also reap." Very similar in meaning is the quotation reading, "Like begets like." Why a man reaps what he has sown, and why "like begets like," have been shown to be due to a phenomenon of nature known as heredity.

If a man plants an inherently poor quality wheat variety, the wheat harvested from that sowing will also be inherently poor in quality. If a man plants "mixed" wheat, his resultant crop will be graded as "mixed." Likewise seed wheat containing rye will produce a rye admixture at harvest. "Smutty" wheat may or may not produce "smutty" wheat, depending upon the soil temperatures at time of germination; but wheat seed free of smut will *not* produce smutty wheat regardless of soil temperatures at time of germination.

It has been said that "pure seed of an adapted, high-quality variety is the foundation of a good crop." Unfortunately, Oklahoma is not blessed with large quantities of pure wheat. This state, like other important wheat states, is faced at market time each year by rather large quantities of wheat which is de-graded because of "mixed" wheat, wheat-rye mixtures, and smut. Such wheat brings a lower price: about two cents less per bushel for "mixed" wheat (i. e., hard wheat containing more than 10% soft wheat, or vice versa); about three cents less for wheat-rye mixtures; and about five cents less for "smutty" wheat.

Why is such wheat de-graded? Logical reasoning tells us that wheat is de-graded at the market because it contains something deleterious to the best use that can be made of that class of wheat in the processing stage. "Mixed" wheat produces a "weak" flour undesirable for bakers' trade. Wheat-rye mixtures produce a dark flour which gives a low-volume, coarse, heavy loaf of bread. "Smutty" wheat requires extra time, expense and equipment in the mill to free it of smut.

In Oklahoma, approximately 75% of the wheat milled each year is used for baker's flour, while only 25% is used in family-trade flour channels. There is no surplus, in Oklahoma or else-

where, of good, sound, high-quality, millable wheat suitable for making flour for the bakery trade. Therefore large premiums are paid by mills to country and terminal elevators for wheat satisfactory for bakery flour production. At the same time, large reductions are made in the price paid for off-grade wheat, which is useful only in certain family-trade flour blends.

Because of the different grades of wheat produced in wheat areas, the country elevator buyer must pay a price equal to the value of the *average* quality of wheat being marketed. For this reason, the producer of off-grade wheat may receive the same price as the producer of excellent quality wheat. However, *the price received by both types of producers is less than the price that would be received if all producers raised only the best type of wheat possible.* In other words, the producer of high-quality grain is being penalized in the market price, and the producer of poor-quality wheat may receive more for his wheat than will be received at the terminal elevator.

In many cases, country elevator buyers are attempting to pay each farmer according to the value of his wheat, i. e., paying a certain price for good wheat and docking for "mixed" wheat, rye admixtures, smutty wheat, or wheat of poor-quality varieties. However, this method of purchasing wheat has, in some cases, caused a buyer to lose business, because the producers located a buyer who paid the same price for all wheat. Rather than lose business, the elevator buyer was then forced to set a single price for all wheat, good or bad. *When that happened, the community as a whole suffered from a community cut.*

The country elevator buyer should not be expected to pay more for his wheat than the terminal market or the mill will pay to him. These markets cannot use off-quality wheat at prices equal to prices of good wheat. They therefore will not pay the same price for poor-quality wheat as they will for good-quality wheat. Thus, the country elevator buyer must set his purchasing price at a level where he can profitably re-sell all the wheat he buys. Some of the wheat (the off-grade wheat) must be sold at a loss, while some (the excellent-quality wheat) must be sold at a reasonably large profit to make up for the loss on the poor wheat.

The production of any quantity of off-grade wheat results from a number of causes, not the least of which is a lack of understanding of the facts of the case by all concerned. Why, for instance, when pure seed of adapted, high-quality wheat can be obtained at reasonable prices, should 1,009 carloads of "mixed" wheat be marketed in one county, as happened during

July and August of 1939? This large amount of mixed wheat marketed during only two months of the year represents 35% of all the wheat produced in that county in 1939. Why should 2,155 carloads of "mixed" wheat be marketed in the State in the same two months? These cars came from 20 of the 77 counties of the State, with 91% of this "mixed" wheat being produced in only 6 counties.

Why should 461 carloads of wheat be de-graded at market because of rye admixture in July and August of 1939 when pure seed is available and careful tillage will eliminate rye? Fully 83% of the rye-wheat mixtures were produced in only 5 counties in 1939.

Why, also, should 219 carloads of smutty wheat be marketed in the State during only the first 30 days of crop movement in 1939 when this smut (often called bunt) can be controlled by seed treatment?

We might also wonder why inherently poor-quality varieties of wheat are produced when their production can only harm the wheat producers by bringing about market discrimination against their area? *Market discrimination is especially evident when any appreciable acreage of poor-quality varieties is found growing in a particular area.*

Why some wheat producers grow unadapted varieties or continue to produce varieties no longer considered to be best for maxium yield is also a question to ponder.

Just as off-grade wheat reached alarming proportions in past years in the spring-wheat market, so also "mixed" wheat, rye in wheat, smut (bunt), and other quality-reducing factors may reach such proportions in the hard red winter wheat belt if intelligent steps are not taken. Of some 1,700 farmers' wheat samples tested in the Oklahoma Farm Wheat Improvement Program during the 1938-39 season, a rather large percentage were classed as "C" grade wheat. This was not because a large percentage of Oklahoma wheat is of unusually poor quality, as compared to that from other wheat areas, but because only those types which were considered the most profitable to Oklahoma farmers were put into classes "A" and "B." These samples were tested by a method which the Canadians adopted years ago when undertaking to correct their off-grade wheat problem.

The Canadian effort to secure general production of high-grade wheat met with great success, changing the Dominion's production of large quantities of off-grade wheat to that of large quantities of exceptionally high-quality wheat. Oklahoma and the entire Southwest must likewise eliminate the careless production of wheat not best suited for the bread-wheat market. The Southwest has built its reputation for high-quality wheat on the basis of wheat suitable for bread-making purposes. This area must continue to produce wheat suitable for that sort of trade if its present market is to be retained. Any further deterioration in the high quality of wheat grown in the State could cause a lesser demand for Oklahoma wheat, which would in turn greatly hamper the profitable production of the State's most important cereal crop.

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# GOOD SEED WHEAT PAYS

## Higher Market Price Per Bushel · Higher Yields Per Acre

### PLANT PURE SEED *of* ADAPTED HIGH QUALITY VARIETIES

You can improve your own wheat crop *and* help improve the quality level of the Oklahoma crop by planting only pure seed *of* adapted, high-quality varieties. ····· Our inspectors report that an average of about 15% of the wheat crop in Oklahoma in the years 1935, 1936, and 1937 graded 'mixed,' (i.e., more than 10% soft wheat in hard wheat or vice versa), about 3% graded down on rye, and 2% graded down on smut. A large percentage of the remaining wheat is made up of mixed varieties of the same class.

### AVOID RYE *and* MIXED SEED

Each percent of rye lowers the wheat one grade. Since there is no mixture more serious than rye, market discrimination is necessary. Rye darkens the flour and produces low volume, coarse, heavy bread.

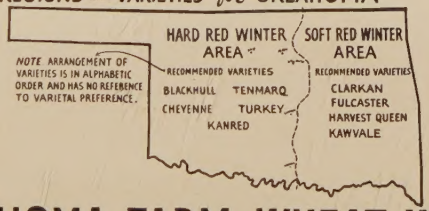
Mixed wheat does not ripen uniformly, nor yield as highly as a single adapted variety. Mixed wheat produces a 'weak' flour undesirable for bakers trade thus the market discrimination

### GUARD AGAINST WHEAT SMUT

Smut destroys the crop, thus causing a lower yield. The decrease in yield is only a part of the loss as the market price is lowered considerably for 'smutty' wheat.

Proper seed treatment can eliminate smut. Directions for treating your seed can be secured from your county agent, and the Department of Botany or the Extension Service of the Oklahoma A. *and* M. College at Stillwater

### RECOMMENDED HARD *and* SOFT WHEAT REGIONS *and* VARIETIES *for* OKLAHOMA




### HOW and WHERE TO OBTAIN SEED WHEAT

Ample seed wheat of any of the adapted, high-quality varieties is available at reasonable prices. Those desiring this seed ~ should contact their county agent; the Oklahoma Crop Improvement Association, Stillwater; or the Oklahoma Farm Wheat Improvement Program, Stillwater. Any one of these three agencies can direct you to good seed.

## OKLAHOMA FARM WHEAT IMPROVEMENT PROGRAM

Agronomy Department, A. *and* M. College, Stillwater, Oklahoma.